LOGIC VALIDATOR

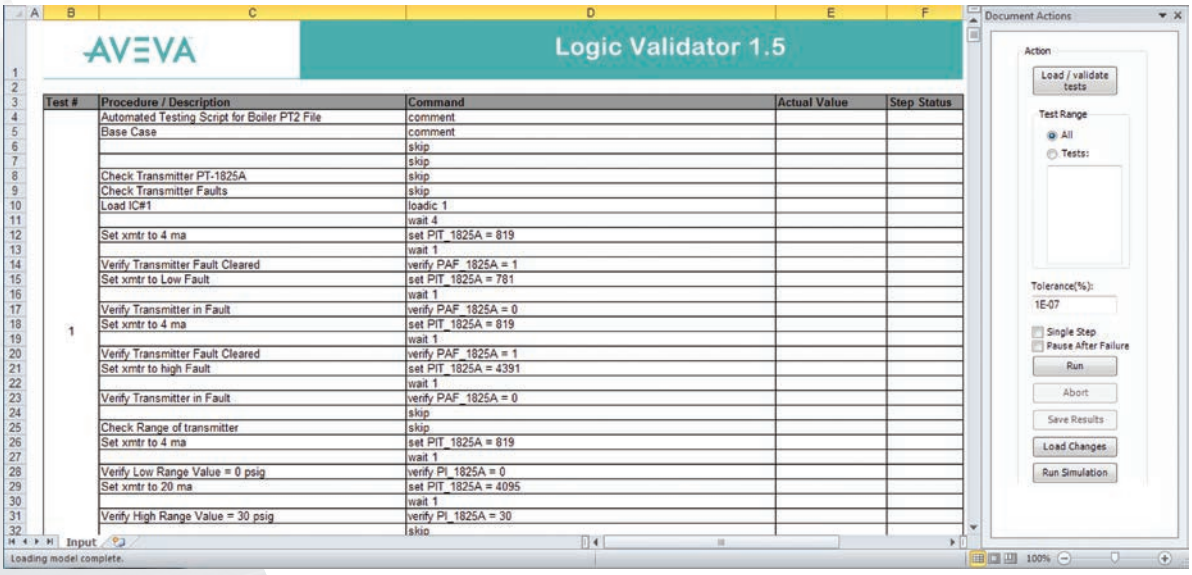
Automated Safety System Verification and Validation Tool Integrated with the Dynamic Simulation Suite

Summary

As a part of the Dynamic Simulation Suite of products, Logic Validator provides an easy to use, robust, and automated test harness that mitigates risk, avoids costly downtime, and meets regulatory requirements for SIS applications. The flexible Excel-based test harness encapsulates best- in-class Factory Acceptance Test procedures that meets ISA-S84 standards with an easy to configure, extendable, repeatable, and self-documenting interfaces. Based on the Dynamic Simulation Suite infrastructure that links to dozens of emulations and links, including Triconex, Foxboro, and other third party software, the same test harness connects to physical hardware through an OPC, DDE, or other protocol interface when actual hardware validation is needed.

A Programmable Approach To Delivering Sustainable Safety Assurance

Safety Instrumented System (SIS) software design and validation are required to meet ISA-S84 standards. Undetected software errors or uncontrolled upsets can cause costly plant startup delays, production outages, severe equipment damage, and even catastrophic failures. A robust and sustainable automated test harness is integral to reducing plant turnaround time and providing the safety excellence needed to reach profit and productivity goals, while meeting safety requirements. AVEVA proudly offers the Logic Validator, a uniquely comprehensive control and safety system checkout tool. The Logic Validator is a field-proven dynamic process simulation program combined with an easy to use Excel interface to automate control validation strategies that can pay for itself and shorten turnaround time, on average, by two days. The Logic Validator enables a sustainable safety culture that helps lower investment and lifecycle costs, complies with international standards, meets safety targets, and achieves a competitive advantage in your market by lowering your cost to validate new and updated control strategies with reusable, modifiable, and automated test procedures. The Logic Validator is an advanced, integrated test harness to automate control logic testing in a soft environment and offers a cost-effective, professional grade alternative to labor intensive manual loopback test procedures.



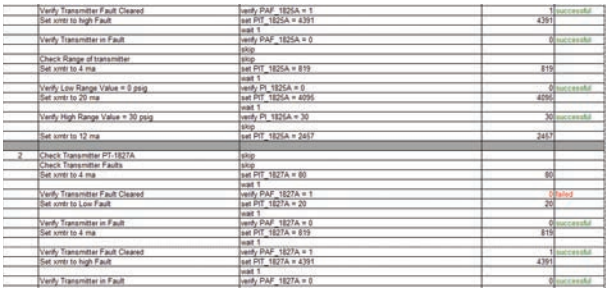
Industries Served

AVEVA's combination of industryvexperience, proven technology, and service expertise can give you the right tools to achieve and maintain optimal control of your plant.

- Engineering & Construction
- Facilities Management
- Food & Beverage
- Life Sciences
- LNG
- Metals, Minerals, Mining
- Nuclear
- Oil & Gas processing
- Petrochemicals & Chemicals
- Power
- Pulp & Paper
- Refining
- Transportation
- Water & Wastewater

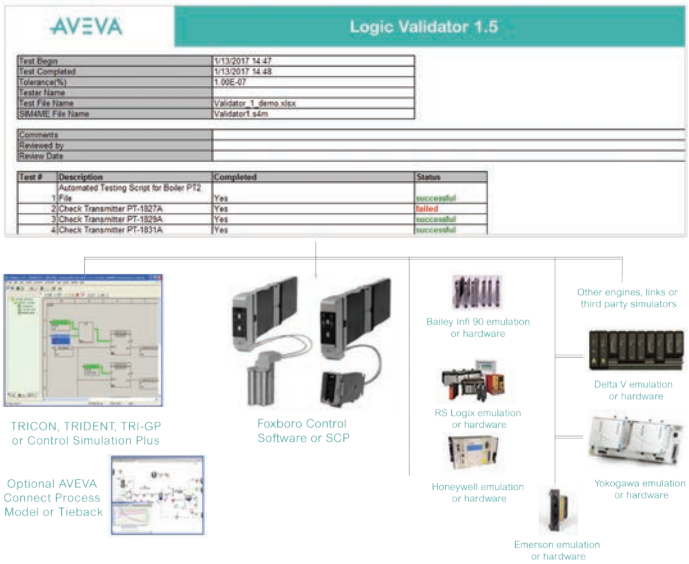
Flexible and Extendable Environment, Dependable Results

The Logic Validator can be configured to test the control configuration of a single controller or extended to test multiple controllers or control systems from a mix of vendors. It can also be used in conjunction with simple tie back models or with a high fidelity Operator Training Simulator (OTS) to validate more complex control scenarios such as runbacks or cascaded control. The same test procedures can be reused on real PLC/DCS hardware when OPC, DDE, or a custom protocol is added.



Benefits

- Minimize capital expenditures
- Dramatically reduce time to commission and start up by accurately analyzing and troubleshooting integrated control systems
- Maximize process/plant uptime, productivity, and yields to achieve a competitive advantage in your market
- Increase reliability and availability, performance and profitability
- Mitigate risks, avoid costly process downtime, and comply with regulations
- Free up critical plant personnel during outages and turnarounds



Logic Validator Applications

The unique features in the Logic Validator provide unmatched ability and tperformance for control system checkout, factory acceptance testing, operator training and simulation.

Control System Checkout

The Logic Validator provides capability for thorough control system checkout it is ideally suited for TriStation 1131 SIS validation and can be easily extended to any control system emulation or to physical controller hardware with these benefits:

- No additional programming is required within the control system configuration
- No additional equipment is needed
- Easy to update the test configuration
- Stable environment for test execution
- Run a subset of a test, a single test, or a set of tests
- Single step, pause, and terminate test early, if desired
- Automatically validate basic test command configurations and Tagname existence

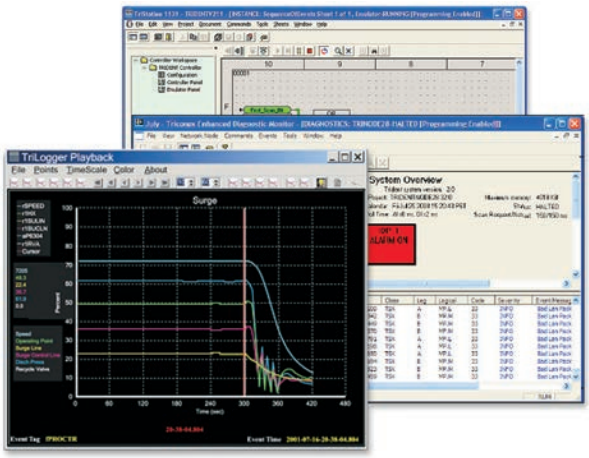
Revalidation During Plant Outage or Turnaround

The Logic Validator is easy to configure and maintain. When logic changes, update the test and revalidate to ensure the new logic doesn't cause unplanned results elsewhere.

- Write new validation scripts without extensive software knowledge
- No need for real SIS hardware
- Easy to increase size of system
- Because the test platform is not tied to the hardware, there is no need to wait for an outage
- Easy to re-execute test procedure with the touch of a button

Triconex Tricon

Foxboro CP280



Factory Acceptance Testing

The Logic Validator provides accurate and cost-effective means to satisfy the rigorous scrutiny of Factory Acceptance Testing (FAT), regardless of system complexity. This bundled process modeling tool can provide virtually all the necessary conditions to thoroughly exercise your entire control system.

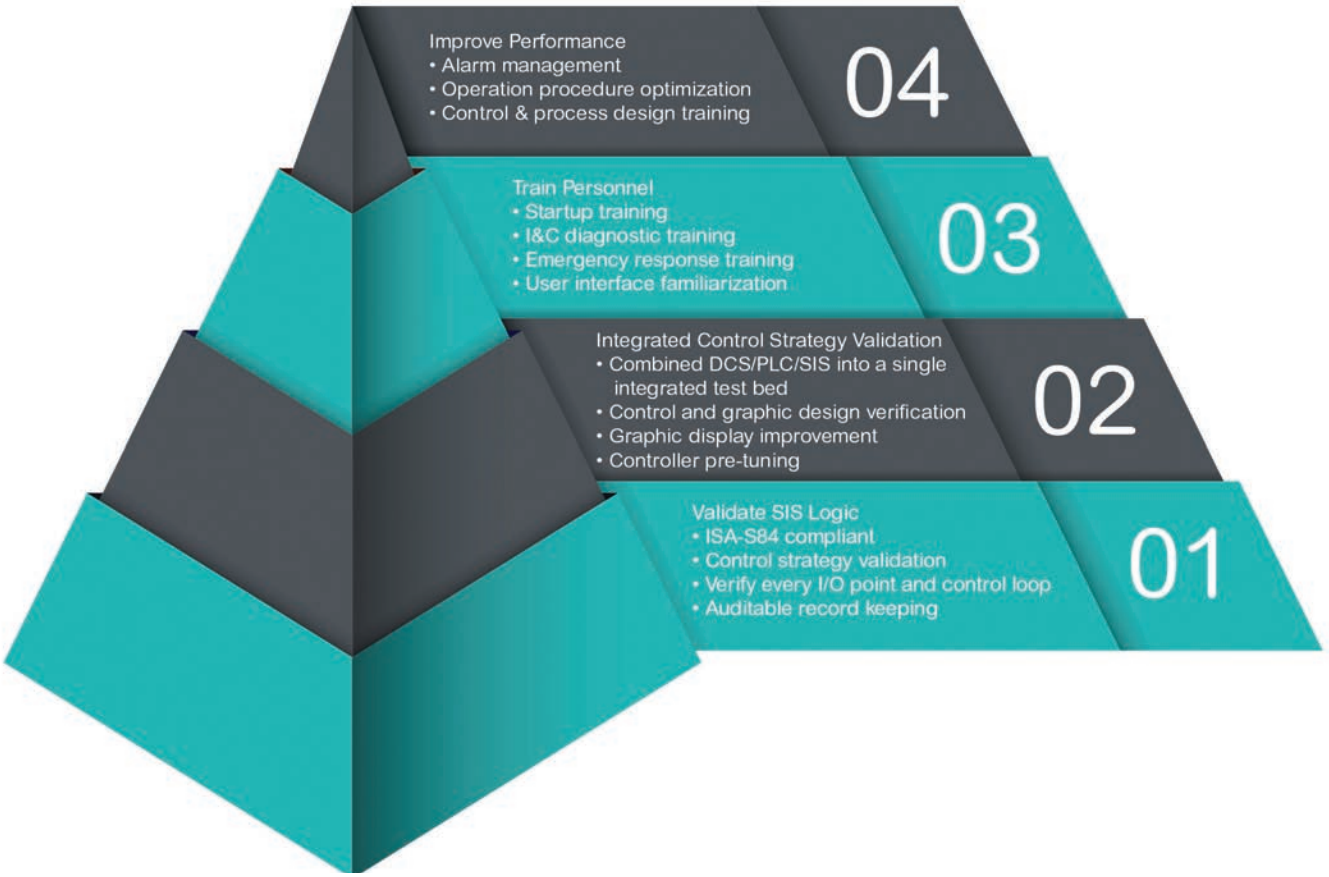
- Test can be structured and approved before the FAT
- Test execution not tied to the capability of the tester
- No fatigue factor encountered during test
- Automate test procedures meet S84 validation and documentation requirements
- Test execution in minutes, not days

Operator Training

The Logic Validator allows operators to learn about control system response and performance in an absolutely safe environment. Operators can run through a wide variety of start-up, shut-down, and malfunction scenarios using the process model and control emulation connected together. It comes equipped with a consistent and reusable training environment to test operators' reactions and response times. Training exercises can be replayed, base lined, and certified to provide a convenient review and teaching tool.

Leverage Your Investment With The Perfect Offline Simulation And Testing Tool

Evolve your I/O and loop validation application into a tool for everyday use by exploiting the versatile Dynamic Simulation Suite infrastructure that powers the Logic Validator. Achieve sustained benefits by leveraging your investment over the plant lifecycle: perform control system checkout, HMI familiarization, and alarm and historian validation utilizing an integrated environment that extends easily to include all DCS, PLC, and SIS applications into a single hardware suite. Over time, convert the platform into a full Operator Training Simulator, to perform acontrollability studies, develop and validate advanced control system algorithms, and train expert operators that can improve your asset performance, shorten project cycle time, and achieve better transition management with smoother startups.



#1 Validate Controller Logic

SimSci provides best-in-class safety system validation strategies that meet ISA-S84 regulatory standards. Validate and revalidate every I/O point and loop in an easy to configure and easy to use interface.

#3 Initial Start-Up

Plant operators can be trained on normal plant operations, startup and shutdown, and response to equipment malfunctions. Operators can be qualified and re-qualified in a risk free environment. In addition, theaccuracy of the control system emulation enables Instrument & Control (I&C) technicians to learn the diagnostic skills and control loop-tuning theory needed for analytical problem solving. system algorithms, and train expert operators that can improve your asset performance, shorten project cycle time, and achieve better transition management with smoother startups.

#2 Integrated Control Strategy Validation

SimSci provides DCS and PLC representations, making it ideal for building and testing plant controls. Checking out controls on the simulator can save days or weeks of commissioning time and bring the plant online sooner. Validating control system response between the DCS / PLC / SIS provides safety assurance to plant startups and mitigates equipment failure.

#4 Plant Operation

High-fidelity simulators can assist in developing and testing control system and process design improvements. SimSci has DCS solutions that enable users to load controls directly from the plant, modify them on the OTS and later transfer them back to the plant. AVEVA Connect process models are extremely easy to maintain and continue to be an effective tool long after conventional training systems become obsolete.

System Specifications

Features

- ISA-S84 compliant
- Automated test harness
- Self-documenting
- Easy to configure interface
- Easy to use interface
- Integrated to run lock-step emulated control logic
- Connectable to physical hardware with OPC UA / OPC DA / DDE / or custom protocols
- Online help and search
- Color-coded input guidance
- Bulk configure tieback models
- Bulk parameterize process model
- AVEVA Connect Base Equipment and Controls libraries for tieback and basic thermodynamic modeling

Connectivity

- Microsoft® Excel
- OPC DA / OPC UA / DDE
- Control Simulation Plus (for Triconex TriStation 1131)
- SCP (for Foxboro EvoTM)
- Foxboro Evo Simulation (for Foxboro Control Software)
- Allen-Bradley RSLogix
- GE Mark V/VI
- ABB Industrial IT
- Compressor Controls Corporation (CCC)
- Emerson DeltaV and Ovation
- Honeywell TDC 3000
- PcXSim (for Honeywell Experion)
- Yokogawa Centum CS 3000
- And more

Dynamic Simulation Suite

The Logic Validator is part of the Dynamic Simulation Suite (DSS) family of products. DSS provides full power rigorous dynamic simulation for plant engineers, operators, and managers to use in optimizing plant operations and design. DSS is comprised of AVEVA Connect, SCP, Control Simulation Plus, Logic Validator and Operator Training programs; collectively offering a professional grade alternative to dated, fragmented and hard to use products. All DSS products can communicate with each other, allowing a perfect combination to suit your exact plant requirements.